

The Knowledge-based Workflow System for Grid Applications

Thursday, 10 May 2007 14:45 (15 minutes)

With a forward look to future evolution, discuss the issues you have encountered (or that you expect) in using the EGEE infrastructure. Wherever possible, point out the experience limitations (both in terms of existing services or missing functionality)

K-Wf Grid is originally developed based on Globus Toolkit 4. The work is being ported to gLite middleware using WSRF job submission service adapter, that receives jobs from the knowledge-based workflow management system and submits it into gLite.

Describe the scientific/technical community and the scientific/technical activity using (planning to use) the EGEE infrastructure. A high-level description is needed (neither a detailed specialist report nor a list of references).

The Knowledge-based Workflow System for Grid Applications (K-Wf Grid) project addresses the need for a better infrastructure for the future Grid environment.

Report on the experience (or the proposed activity). It would be very important to mention key services which are essential for the success of your activity on the EGEE infrastructure.

The K-Wf Grid system consists of several layers. The user interacts with the top layer, can access the service workflows using an interactive workflow GUI, and can access collaborative knowledge base, existing workflows, and results using the User Assistant. The top layer also provides access to results (intermediate as well as final ones). All these tools are integrated in one web-based portal. The actual middleware layer consists of a workflow management system, a knowledge store, and modules for monitoring, performance analysis, and performance prediction. The filtered monitoring information is processed in the performance prediction module, where new facts are created and stored in the knowledge store. This knowledge store is then queried during

workflow
construction/execution for best available services.

Describe the added value of the Grid for the scientific/technical activity you (plan to) do on the Grid. This should include the scale of the activity and of the potential user community and the relevance for other scientific or business applications

The K-WfGrid project introduces several new ideas and innovations in the area of Grid workflow application development, application of knowledge-based technology and performance monitoring services. The main innovation of the K-WfGrid workflow management technology includes a novel approach of supporting knowledge-based workflow orchestration and Grid Service selection by means of an expert system. K-WfGrid will develop an ontological app

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Session Classification: Workflow

Track Classification: Workflow